

RECLAMATION

Managing Water in the West

Upper Klamath Lake Fish Screen Program Draft Environmental Assessment

Klamath Project, Oregon
Mid-Pacific Region
September 2007



U.S. Department of the Interior
Bureau of Reclamation
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The Bureau of Reclamation, Klamath Basin Area Office, has developed this Draft Environmental Assessment (EA) for the Upper Klamath Lake Fish Screen Program. The EA is available for a 30-day public comment period beginning December 3, 2007. Written comments regarding the EA will be accepted until January 4, 2008, and should be submitted to: Bureau of Reclamation, 6600 Washburn Way, Klamath Falls, Oregon, 97603 – Attention: Chuck Korson, Fish Passage Manager. You may also request copies of the EA by contacting 541-883-6935 or Mr. Korson directly at 541-880-2575.

Chapter 1: Need and Purpose

The Bureau of Reclamation is required to minimize the take of endangered Lost River and shortnose suckers as a result of entrainment from Klamath Project operations, pursuant to the Endangered Species Act (ESA) Incidental Take Statement (ITS) on 2002-2012 Project Operations (Service, 2002). The U.S. Fish and Wildlife Service (Service) issued specific reasonable and prudent measures (RPMs) within the ITS in order to minimize such take as follows:

RPM 1a: Assess and Implement Methods to Reduce Entrainment of Larval Suckers;
RPM 1b: Assess and Implement Methods to Reduce Entrainment of Juvenile, Sub-adult, and Adult Suckers at Project Diversions.

Reclamation's Klamath Basin Area Office (KBAO) has responded to this ESA requirement by developing a Sucker Entrainment Reduction Plan and forming the Klamath Fish Passage Technical Committee (KFPTC) to guide Reclamation's efforts to install fish screens and/or improve fish passage at Project diversions and dams. The KFPTC meets bi-monthly and is a multi-agency technical working group comprised of biologists, engineers, and irrigation district members, including the Service, Oregon Department of Fish and Wildlife (ODFW), California Department of Fish and Game (CDFG), Klamath Irrigation District (KID), Tule Lake Irrigation District (TID), and Langell Valley Irrigation District (LVID).

Reclamation has legal authority under the Reclamation Reform Act of 1902 to screen and/or provide improved passage at Federal owned diversions within the Project. These are defined as diversions sites which 1) were constructed as part of the original envisioned Project, 2) title is held by the United States, and 3) the addition of fish screens and/or passage facilities are proper operation and maintenance activities which can be undertaken pending the availability of funds. KBAO has made significant progress meeting its entrainment reduction and passage responsibilities at Federal owned facilities by recently constructing the new A-Canal fish screen and bypass facility in April 2003 and Link River Dam fish ladder in January 2004.

Reclamation, in conjunction with KFPTC recommendations and consistent with Service recommendation, is now focusing its fish passage program activities on screening private, non-Federal diversions which are located in Upper Klamath Lake (UKL) and Agency Lake (AL) and which also occur within the Project boundaries. Reclamation, KFPTC, and Service biologists believe this direction is warranted because screening non-Federal diversions in UKL/AL will provide the greatest potential benefits to endangered sucker populations where the risk of loss due to entrainment is highest.

Reclamation, therefore, is proposing to implement the UKL Fish Screen Program (UKL FS Program) to reduce an anthropogenic risk factor (i.e. irrigation water diversions) potentially limiting sucker survival where populations are most abundant within the Project area. KFPTC

and Service biologists also conclude endangered sucker populations are more robust in UKL and the larger number of juvenile suckers in UKL is particularly vulnerable to entrainment if private diversions on UKL and AL remain unscreened. The Service supports Reclamation's initiative to screen priority diversion sites in UKL/AL and concludes screening on private diversions in UKL/AL is likely to provide substantial survival benefits for endangered sucker populations (Service, 2005a).

Reclamation is preparing a Programmatic Environmental Assessment (EA) for the proposed UKL FS Program, pursuant to the National Environmental Policy Act of 1969 (NEPA). This EA analyzes and evaluates the environmental impacts of implementing Federal action to help fund construction of state-of-the-art fish screens at privately owned diversions which withdraw water for irrigation purposes on UKL/AL. This EA also evaluates the no action alternative in accordance with NEPA requirements and Council of Environmental Quality regulations. The proposed Federal action is analyzed in general detail since site-specific actions will not be undertaken until a later date.

This programmatic EA sets out the specific procedure for Reclamation to complete site-specific environmental evaluations and other needed compliance requirements (i.e., cultural resource surveys, Clean Water Act Section 404 permits, etc.) prior to any fish screens installations on UKL/AL diversions.

1.1 STATUTORY AUTHORITY

Reclamation is pursuing this UKL FS Program using its delegated authority under the Fish and Wildlife Coordination Act (FWCA), section 16 U.S.C §661. In 1966, Reclamation received FWCA delegated authority to provide assistance, through grants or cooperative agreements, for the improvement of fish and wildlife habitat associated with water systems or supplies affected by Reclamation projects. Reclamation's Klamath Project operations impacts spatially and temporally endangered shortnose and Lost River sucker populations in UKL when lake elevations decline and reduce available spawning and rearing habitat. Sucker populations are potentially vulnerable to the effects of entrainment at UKL private diversions when water is diverted as lake levels decline during the irrigation season. Therefore, Reclamation can exercise its FWCA authority because it can be demonstrated that sucker habitat is affected by ongoing Klamath Project operations.

1.2 NEED AND PURPOSE FOR ACTION

Irrigation diversions which are unscreened allow fish to enter (i.e. to become entrained) into irrigation canals where they are subsequently permanently lost to the spawning population. The Service (2002) has determined that (1) Klamath Project water diversions and dams will entrain millions of larvae and tens of thousands of juveniles, and thousands of sub-adult and adult suckers, and (2) fish entrainment on the Klamath Project reduces the population of suckers and limits the amount of recruitment into adult spawning populations. Fish screens designed to meet

acceptable screening criteria are installed on such unscreened diversions to prevent entrainment of fish, reduce incidental take levels, and lower overall man induced mortality rates due to ongoing irrigation practices.

The UKL FS Program responds directly to the need for biologically effective fish screens to reduce the risk of entrainment where endangered sucker populations are most abundant and widely distributed in UKL/AL. Fish screen facilities which meet acceptable fish screen criteria are needed where none currently exist.

The following purposes to be attained are:

1. Provide funding to install fish screen facilities which meet acceptable criteria for approach velocity, sweeping velocity, and orientation to flow.
2. Provide funding to install fish screen facilities on UKL/AL diversions to complement the State of Oregon's current statewide cost-share fish screen program.
3. Develop effective outreach strategies to work constructively and pro-actively with landowners willing to participate in the UKL FS Program.
4. Contribute to the recovery of endangered Lost River and shortnose sucker populations endemic to the Upper Klamath Basin.

1.3 GENERAL AREA DESCRIPTION AND LOCATION

UKL and AL are shallow lake water bodies within the Upper Klamath Basin which is nestled between the eastern foothills of the Cascade Range and the Great Basin Desert region of eastern Oregon. This includes the upper Klamath River, the Butte Valley, and the Lost, Williamson, and Sprague rivers and their tributaries. This area includes most of Klamath County, Oregon, a large part of Modoc County, California, small portions of Lake and Jackson counties in Oregon, and Siskiyou County in California. Landholding falls under a wide range of ownership, including Federal (National Park Service, United States Forest Service (USFS), Bureau of Land Management, and several national wildlife refuges), state (Oregon Department of Forestry and Oregon Department of Natural Resources), the Klamath Tribes, and private landholders.

The Great Basin Desert region encompasses approximately 12,000 square miles, or approximately 7.5 million acres. The primary town in the area is Klamath Falls, Oregon.

The Klamath Falls elevation, near the center of the basin, is approximately 4100 feet above sea level. The highest peak in the area, Mount McLoughlin, rises to 9495 feet. Crater Lake National Park is in the northwest corner of the region, Lava Beds National Monument and Tule Lake National Wildlife Refuge are to the south, the Winema, Fremont, Modoc, and Klamath National Forests occupy the forested mountains surrounding the basin. Historically, the lowlands

consisted of extensive wetlands and broad, shallow lakes--UKL and its surroundings being the prime example. Otherwise the lowland landscape is characterized by Great Basin shrub types and forests composed of a mix of hard and soft woods. As a result of extensive wetlands draining in the first half of the twentieth century, former wetlands have largely been converted to active agricultural lands.

The United States Congress passed the Reclamation Reform Act of 1902 which authorized creation of the Klamath Project, an extensive system of dikes, canals, and dams constructed throughout the basin to drain the marshes and provide irrigation water to previously dry fields. Construction projects continued until the 1960's and brought approximately 200,000 acres under irrigation, creating prime farming and ranching lands.

Reclamation's Klamath Project remains an important part of the regions economy. Agriculture is the dominant economic activity in the lowlands, producing large quantities of potatoes, grains, and alfalfa as well as other products. Extensive grazing takes place in the cultivated valleys and on the public lands surrounding the basin. Timber harvesting became an important economic activity in the forests surrounding the basin, especially after major railway connections were established between the basin and outside markets in the early 1900's.

1.4 RELATED ACTIONS AND ACTIVITIES

1.4.1 Oregon Department of Fish and Wildlife Fish Screen Statutes

The State of Oregon has adopted administrative laws that address fish screening. These laws are in the Oregon Revised Statutes (ORS). ORS 498.306 establishes that at water diversions of 30 cubic-feet per second (cfs) or less, fish screening or by-pass devices are voluntary, the water user is responsible for minor maintenance, and ODFW is responsible for major maintenance. Minor maintenance includes cleaning trash racks, lubrication, and greasing. Major maintenance includes replacement of screening equipment, e.g., a damaged gearbox, bearings, or screen seals. Fish screening or by-pass devices are required at water diversions larger than 30 cfs, and the water user is responsible for installation, operation, and all maintenance. Under these ORS, the State can fund up to 60 percent of the cost to design, construct, and install fish screens, and the owner of the device may be eligible for a 50 percent tax credit up to \$5,000 per device. ORS fish screen rules are being revised during the 2007 Oregon Legislative Session to clarify fish screen goals, cost share, and maintenance as well as consolidate ORS which are redundant.

1.4.2 Klamath Fish Passage Technical Committee

Reclamation's KBAO formed the KFPTC in 2002 to help guide efforts to install fish screens and/or fish ladders on the Klamath Project and in the Upper Klamath Basin. Reclamation, working with the KFPTC, developed a Sucker Entrainment Reduction Management Plan (Reclamation 2002) to determine priorities for implementing screening

and/or fish passage improvement projects on the Klamath Project . The KFPTC meets approximately bi-monthly each year and is composed of biologists, engineers, and water users who meet in an open forum to discuss, review, plan, and design fish screen/passage issues and concepts. KFPTC members include the Service, ODFW, CDFG, KID, LVID, TID, Klamath Tribe, Klamath Watershed Council, and Klamath Water User Association. Depending on the fish screen/ladder project which is being addressed, other interested and/or affected entities are invited to participate in the KFPTC's planning, design, and technical discussion process.

1.4.3 U.S. Fish and Wildlife Service Ecosystem Restoration Program

The Service operates the Klamath Basin Ecosystem Restoration Office (ERO) to recover ESA listed fish and wildlife species, restore ecosystem function, and improve the reliability of water deliveries in the Upper Klamath Basin, Oregon, and California. The ERO entertains proposals and disburses funds to public agencies, for-profit and non-profit organizations, Native American tribes, and private landowners to accomplish restoration objectives. ERO administers water restoration work which is part of the Hatfield Restoration Program, with guidance provided by the Upper Klamath Basin Working Group and Hatfield Restoration Science Team.

1.4.4 Oregon Watershed Enhancement Board

The Oregon Watershed Enhancement Board (OWEB) is an Oregon State agency which focuses on projects that approach natural resources management from a whole-watershed perspective. OWEB encourages projects that foster interagency cooperation, include other sources of funding, provide for local stakeholder involvement, include youth and volunteers, and promote learning about watershed concepts. There are four general categories of projects eligible for OWEB funding:

1. On-the-ground watershed management (restoration and acquisition).
2. Assessment and/or monitoring of natural resource conditions.
3. Opportunities for learning about watershed concepts (education/outreach).
4. Watershed council support (i.e. Klamath Watershed Council)

Chapter 2: Alternatives Considered

This chapter presents the no action alternative and the proposed Federal action. The following section describes the no action alternative and the proposed action in detail.

2.1 PROPOSED ACTION AND ALTERNATIVES

2.1.1 No Action Alternative

Under the no action alternative, Reclamation would not implement the UKL FS Program aimed at providing funding assistance to install fish screens on private diversions which withdraw water from UKL and AL. Those landowners who own and operate UKL and AL irrigation diversion structures would not receive potential Federal funding assistance from Reclamation to install fish screens on their unscreened diversions. Fish screens would continue to be installed on UKL and AL diversions at the current pace operating under the ODFW current statewide cost-share fish screen program.

2.1.2 Proposed Action Alternative

The proposed action would reduce fish entrainment at privately owned diversions on UKL and AL within Klamath County in southern Oregon. Reclamation proposes to implement this UKL FS Program by providing Federal grant funding to ODFW, an Oregon state agency. ODFW, as the recipient of the Federal grant funds, was selected by Reclamation through a competitive request for proposal process. ODFW would administer the Federal funds in combination with required funds contributed by the recipient to provide a private landowner with up to 90 percent of the total cost to physically construct a fish screen facility (i.e., landowner must contribute 10 percent of the construction cost). ODFW would be responsible for planning/design of the fish screen facility, would assure that state-of-the-art fish screens criteria are successfully constructed on the ground, and would be responsible for providing long-term maintenance of fish screens in accordance with Oregon statute (see below).

ODFW would ensure that all fish screens are designed and installed to satisfy *Recommended Interim Fish Screen Criteria for the Upper Klamath Basin*, adopted by the Service, ODFW, and CDFG in July 2005 (Figure 1). Each landowner who participates in this cost-share program will have assurance that their diversion is equipped with the latest state-of-the-art fish screen facility which will substantially reduce the incidental take of endangered suckers from their diversion. In the event these Recommended Interim Fish Screen Criteria for the Upper Klamath Basin are superseded in the future, ODFW would adhere to any new updated screening criteria which are adopted.



JUL 28 2005

Recommended Interim Fish Screen Criteria for Upper Klamath Basin

To whom it may concern,

The U.S. Fish and Wildlife Service (FWS), Oregon Department of Wildlife (ODFW) and the California Department of Fish and Game (CDFG) announce interim criteria to be applied when installing fish screens on irrigation diversions in the upper Klamath Basin (above Iron Gate Dam). Fish screens can significantly reduce entrainment of native fishes, including redband trout, and endangered Lost River and shortnose suckers and the three agencies recommend they be used. The three resource agencies have agreed that the recommended interim screening criteria will be consistent with the criteria NOAA Fisheries has specified for juvenile salmonids in the Pacific Northwest:

(<http://www.nwr.noaa.gov/1hydroweb/docs/passagetcriteria.extrevdraft.pdf>).

These are interim criteria because they will be superseded in the future by NOAA Fisheries criteria that are being revised, and the adoption of rules by ODFW will provide fish screening and passage criteria applicable to all of Oregon. In one deviation from the NOAA Fisheries criteria which requires a bypass, FWS and ODFW recommend that in slack-water diversion situations where a bypass is not practical (e.g., head of canals), fish screens be designed with approach velocities of 0.2 feet/second, to allow weaker swimming juvenile fish to escape entrainment in the fish screen. Other site specific variances will be considered by the three agencies on a case-by-case basis. The Bureau of Reclamation (Reclamation) has agreed to use these criteria on all new fish screens built by Reclamation in the Klamath Project.

Upper Klamath Basin water users in Oregon and/or California interested in placing fish screens on irrigation diversion structures, and/or getting technical assistance on fish ladder issues, are encouraged to contact Rich Kilbane of the ODFW at (541) 826-8774 or Rick Davis of CDFG at (530) 841-2550



Figure 1 – Recommended Interim Fish Screen Criteria for Upper Klamath Basin, 2005.

The potential sites eligible to be screened under this proposed action are those which withdraw water from UKL and AL for irrigation purposes. Figure 2 shows UKL diversions which have been previously identified based upon boat surveys, professional knowledge, and water rights information. This diversion information may not be an exhaustive list of all private diversion sites which withdraw water from UKL/AL for irrigation purposes. The proposed alternative is intended to complement an existing statewide fish screen financial and technical assistance program currently administered by ODFW. ODFW has already successfully installed fish screens at selected UKL diversion sites under its statewide fish screen assistance program. It is expected that implementation of the proposed action would accelerate ODFW current efforts to install fish screens throughout the Upper Klamath Basin.

The proposed action would be implemented on a multi-year schedule based upon the availability of Federal funding. The grant recipient would generate fish screen concept plans for a particular diversion site and then present these concepts to the KFPTC for review and comment prior to completing a final design and implementing a project on-the-ground. Once the KFPTC completes its technical review process, the grant recipient would prepare a final specification package leading to either (1) an independent contract to have the fish screen facility constructed, or (2) recipient personnel performing all necessary activities to fully construct a particular fish screen facility. The grant recipients fish screen design concepts and construction work would be done in accordance with Interim Sucker Fish Screen Criteria shown in Figure 1.

Fish screen structures implemented on-the-ground would incorporate state-of-the-art technology and may range from (1) vertical flat plate and/or traveling screens associated with a new headgate structure, automated brush system to clean screen surfaces, and typically with a fish bypass return for surface water withdrawal facilities, (2) submersible, horizontal fish screen structures with air burst cleaning systems for surface water withdrawal facilities when water velocities are minimal, and (3) simple submersible intake screens for pump diversion withdrawals. Figures 3 - 6 provide examples of types of fish screens which typically may be installed at UKL and AL diversions.

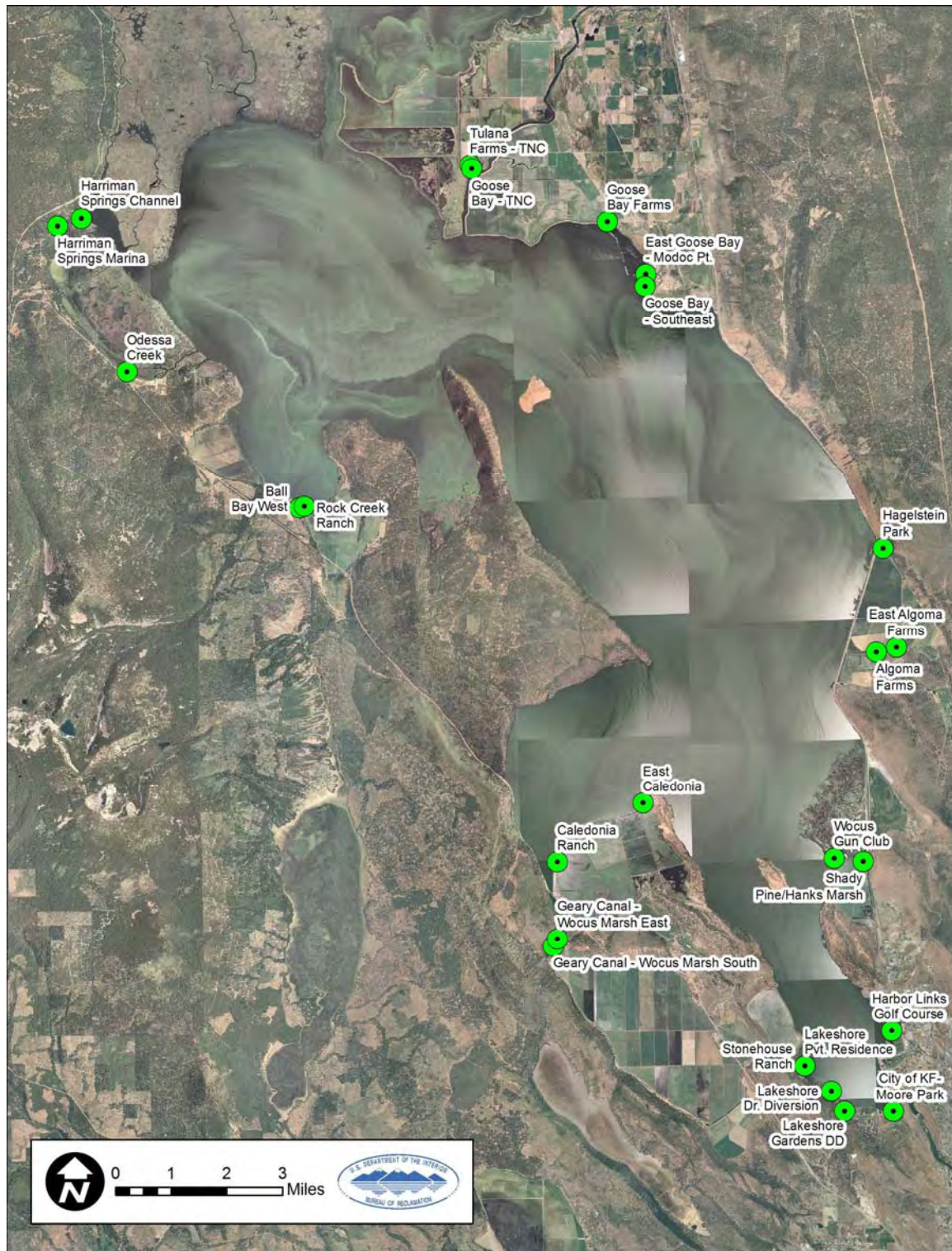


Figure 2 - UKL Diversions identified in June 2005



Figure 3 - Vertical flat plate screen, solar powered with wiper system, Keno Impoundment, Klamath River



Figure 4 - Gravity Pump Intake with self-cleaning pump screen, Upper Klamath Lake



Figure 5 - Electric Powered rotary drum screen, Klamath River



Figure 6 - Typical pump screen on suction intake line

As previously indicated, ODFW will specify long-term maintenance responsibilities in agreements executed between ODFW and a water user who agrees to participate in the UKL FS Program. ODFW will carry out long-term maintenance responsibilities in accordance with Oregon Revised Statute 498.306 as follows:

- For diversions less than 30 cfs, the landowner (water user) would be responsible for all minor maintenance which means periodic inspection, cleaning, and servicing of the fish screen device at such times and in such manner as to ensure proper operation;
- For diversion less that 30 cfs, ODFW is responsible for all major maintenance, which means all maintenance work done on a fish screen other than minor maintenance. The water user also agrees to notify ODFW when major maintenance on a fish screen is needed. The ODFW fish screen shop in Central Point, Oregon will conduct all major maintenance activities;
- The water user would be responsible for all maintenance of fish screen structures at diversions which divert 30 cfs or more of water.

Reclamation at this time has general knowledge about the number and distribution of UKL diversions which are subject to this programmatic EA. Site specific information needed to determine the potential magnitude of environmental impacts at unscreened UKL and AL diversions is not available until specific fish screen projects are formulated and ultimately implemented on-the-ground. The proposed action, therefore, includes that site-specific environmental evaluations will be prepared before specific fish screen projects are implemented on-the-ground to ensure that environmental effects are completely documented and consultations with resource agencies (i.e. Service) are carried out to comply with Section 7 of the ESA. These site specific environmental evaluations will be tiered to this programmatic EA (see Appendix A). For each fish screen project implemented under this programmatic EA, Reclamation will ensure site specific environmental evaluations are conducted to make determinations regarding the level of Section 7 ESA consultation to undertake with the Service, and to assure that necessary Clean Water Act (CWA) and OR Department of State Lands (ODSL) fill-removal permits are secured before construction occurs.

Chapter 3: Affected Environment and Environmental Effects

This chapter describes the environment of the Upper Klamath Basin (UKB) within which UKL and AL occur. Only those environmental resource areas that could potentially be affected by the proposed action are described. Those potentially affected resource areas are air quality, water quality, threatened and endangered species, resident fish, wildlife, wetland/riparian habitats, cultural resources, and noise. The following resource areas will not be affected by the proposed action and are not included in the environmental effects section: water storage/lake levels, hydrology, soils, land-use, and recreation. This EA also evaluates effects on Indian Trust Assets and Environmental Justice as required under current Reclamation and Department of the Interior policy.

3.1 AIR QUALITY

3.1.1 Affected Environment

Air quality in the region ranges from excellent at high elevations (i.e. Crater Lake National Park and the Sky Lakes Wilderness Area) to the Basin valley floor which may at times experience poor air quality periods, specifically in the form of particulate and carbon monoxide emissions due to the use of wood burning stoves in the winter. In general, air quality in and around the Klamath Falls area is good and generally does not exceed Oregon Department of Environmental Quality (ODEQ) air quality standards. Fires, both wild forest fires and prescribed burns, contribute to low visibility in the late summer and early fall.

3.1.2 Environmental Effects

3.1.2.1 No Action

Reclamation would not undertake this Federal action; therefore, air quality would not be impacted. Ongoing and future activities which may impact air quality, such as wood burning stoves, automobile emissions, and economic and industrial development would continue.

3.1.2.2 Proposed Action

Construction activities undertaken under this action would have very slight, highly localized, and short-term impacts on air quality. Trucks and/or other construction equipment operating at UKL and AL sites could marginally increase dust, particulate material, and gas emission levels in the immediate construction areas. Fish screen construction activities would occur during the non-irrigation season in

de-watered canals and in de-watered environments where soils are relatively moist, thereby reducing the likelihood that dusty work areas would arise. Construction would be dispersed over several sites spread many miles apart, during different months, and over a multi-year time span. The majorities of diversions is highly dispersed and are located in rural areas away from resident population centers; therefore, any temporary air quality disturbances would be un-noticeable. Fish screens which are operated will not impact air quality since emissions, dust, or chemicals are not released into the environment.

3.2 WATER QUALITY

3.2.1 Affected Environment

Water quality changes have the potential to severely affect many plant and animal species, although most have at least some tolerance for variations in water characteristics. Many of the species considered “at risk” in the UKB have had their living habitat altered by changes in the chemical composition, temperature, and amount of sediment carried in the water. Human activities, such as agriculture, logging, road construction, urban development, and water impoundment/diversions have contributed to these changes. Natural events such as climate change and landslides are also important factors affecting water quality. The combination of these activities has changed water quality of the UKB during the last century.

UKL and AL are large, shallow lakes (6-10 feet average) that historically are eutrophic and which currently are classified as hyper-eutrophic. The lakes experience seasonal blooms and die-offs of cyanobacteria (blue green algae, *Aphanizomenon flos-aquae*) which lead to very poor water quality conditions expressed as high pH, low dissolved oxygen, and high un-ionized ammonia concentrations. The lakes generally do not thermally stratify, and water temperatures may reach as high as 86°F (30°C) during summer months. When blue-green algae densities are at their highest from May to October, the upper water column may become super-saturated with respect to oxygen, and pH may be as high as 9 to 10 due to algal respiration activity. Photosynthesis results in large algae die-offs and low or anoxic oxygen conditions typically in August. UKL also has periodic episodes of high chlorophyll-a, and total phosphorous concentrations which are typical of eutrophic/hyper-eutrophic lake bodies.

ODEQ has identified UKL as a water body which violates Section 303(d) water quality standards of the CWA. UKL and AL were 303(d) listed for low dissolved oxygen (DO), high chlorophyll-a, and high pH in 1998 (ODEQ, 2002). It has been proposed that this impaired water quality has, in part, led to the mass mortalities of suckers which occurs occasionally during summer and fall in some years. Martin and Saki (1999) conducted studies suggesting that fish mortality did not always increase as water temperature, pH, and

un-ionized ammonia levels increased in UKL, but high fish mortality occurred when DO conditions decreased to low levels (i.e., 1.05 milligrams/liter).

3.2.2 Environmental Effects

3.2.2.1 No-Action

Reclamation would not undertake this Federal action; therefore, water quality would not be impacted. Ongoing and future activities that impact water quality would continue, including irrigation/farming practices, pesticide/chemical use, and cattle grazing among others.

3.3.2.2 Proposed Action

Construction activities undertaken under this action would occur, for the most part, during the non-irrigation season (beginning normally in October) either in an existing canal system or within the UKL/AL lake environment. Water quality would be unaffected in instances where construction occurs directly inside a canal and/or ditch since equipment would not be in direct contact or association with lake waters. In instances where cofferdam (i.e. earthfill, sandbag, clean river rock, or sheetpiles) structures need to be placed within UKL/AL to isolate lake water from work areas, the proposed action could cause temporary and short-term increases in turbidity in the immediate work zones when such structures are installed and dismantled. However, cofferdams which are installed properly and conform to regulatory agency requirements (i.e. U.S. Army Corps of Engineers (COE), ODEQ, and ODSL) will greatly minimize turbidity levels which could arise. Fish screens, when they are constructed, would occur at diversions which are quite distant from each other, so even if multiple screen projects are implemented simultaneously over the identical time period, there would be no measurable cumulative impacts to water quality since effects are highly localized and isolated from each other.

It is unlikely that any short-term increases in turbidity would significantly impact lake water bodies, since contractors would need to conform with authorized CWA permits (i.e. COE Section 404, ODEQ Section 401) which would be issued to minimize water quality impacts and discharges back to UKL/AL. The proposed action may require a CWA Section 402 permit (i.e. National Pollution Discharge Elimination System) when the construction disturbance area is one acre or larger.

3.3 FISHERIES AND WILDLIFE

3.3.1 Affected Environment

3.3.1.1 Fisheries

The UKB was once, in the Pleistocene epoch (10,000-25,000 years ago), dominated by a single large lake--Lake Modoc--which stretched from near Tule Lake to Fort Klamath, covering 1,096 square miles. UKL is the largest remnant of that historic body of water and historically provided unique habitat conditions that allowed a diverse array of fish species to evolve and survive. The basin is home to a number of unique fish species and stocks including three catostomid (sucker family) species and another 12 species native to the UKB.

The major human impact on native fish species over the last 150 years has been the fragmentation and loss of components of the marsh/lake/stream systems. The upper basin floor was developed for agriculture, a process which included extensive diking, channeling, draining, and loss of marshlands. Irrigation diversions were constructed on most streams and caused dewatering and physical blockages for both upstream and downstream migrating trout. Cattle grazing also contributed to channel destruction in some locations. Water quality, temperature, and sedimentation changes are also suspected to have adversely impacted fish populations.

Three fish species have historically occurred or currently occur around UKL/AL and are listed as federally threatened or endangered (Reclamation 2003, Service 2004). These species are discussed in Section 3.4, under Threatened and Endangered Species. In addition, 13 fish and wildlife species have been identified by the USFS Region 6 as species of interest that occur or may occur within the project area. The USFS maintains a complete list of sensitive fish and wildlife species that occur in Region 6, including all of Oregon and Washington. The USFS Chiloquin Ranger District maintains a modified list of Region 6 sensitive species that may occur or have the potential to occur (habitat present) in the project area. The fish and wildlife species identified by the USFS are the Klamath largescale sucker (*Catostomus snyderi*), interior redband trout (*Oncorhynchus mykiss newberrii*), several lamprey species (*Lampetra* spp.), American peregrine falcon (*Falco peregrinus anatum*), bufflehead (*Bucephala albeola*), northwestern pond turtle (*Clemmys marmorata marmorata*), Pacific fringe-tailed bat (*Myotis thysanodes vespertinus*), Pacific pallid bat (*Antrozous pallidus pacificus*), and Klamath pebblesnail (*Fluminicola N. Sp. 1*). Table 3-1 provides this USFS Sensitive species list and their status.

Table 3-1. USFS Region 6 Sensitive fish and wildlife species which occur or have the potential to occur within the UKL/AL project area.

Common Name	Scientific Name	State Status ^{a,b}	Forest Service Region 6 Sensitive Species ^{d,e}
Klamath largescale sucker	<i>Catostomus snyderi</i>	Note C	SS
Interior redband trout	<i>Oncorhynchus mykiss newberrii</i>	SOC	SS
Pit-Klamath Brook lamprey	<i>Lampetra lethophaga</i>	SOC	SS
Modoc Brook lamprey	<i>Lampetra folletti</i>	SOC	
Klamath River lamprey	<i>Lampetra similes</i>	SOC	SS
Miller Lake lamprey	<i>Lampetra minima</i>	SOC	
Undescribed Upper Klamath lamprey	N/A	SOC	
Klamath pebblesnail	<i>Fluminicola n. sp. 1</i>		SS
American peregrine falcon	<i>Falco peregrinus anatum</i>	E	SS
Bufflehead	<i>Bucephala albeola</i>		SS
Northwestern pond turtle	<i>Clemmys marmorata marmorata</i>		SS
Pacific fringe-tailed bat	<i>Myotis thysanodes vespertinus</i>		SS
Pacific pallid bat	<i>Antrozous pallidus pacificus</i>		SS

a. E = endangered; T = threatened

b. SOC = species of concern

c. Considered for federal listing in the late 1980s.

d. SS – Region 6 Sensitive Species

e. Region 6 Sensitive Species identified by the Forest Service as being present or having habitat present in the project area

3.3.1.1.1 Klamath Largescale Sucker

Listing Status. In the late 1980s, the Service considered the Klamath largescale sucker to be a candidate species for listing under the ESA (Reclamation 2003). It is currently not a federal or state protected species, but is listed as a USFS Region 6 Sensitive Species. In the mid-1980s, Klamath largescale sucker populations were estimated to be as low as 7,000 individuals (Reclamation 2003). The population of Klamath largescale suckers has not been recently monitored. In response to the many factors adversely affecting suckers, the State of Oregon took management action to terminate the recreational harvest of suckers in the 1980s in an effort to benefit UKL sucker populations.

Habitat Preference. The Klamath largescale sucker consists of two populations; one follows the general life pattern of rearing in the lake and spawning in rivers, but the other rears and spawns in river systems and

spends its entire life cycle in riverine habitat. There is little information available on the river life history.

Klamath largescale suckers are predominant above Klamath Falls. Spawning usually occurs on gravel substrates from late March to mid-April, though it sometimes occurs earlier in streams fed by warm springs. In UKL, spawning migrations occur in March, with a peak at the end of March. The Klamath largescale sucker is likely vulnerable to disturbance on the spawning grounds. It feeds primarily on benthic organisms and may grow up to two feet in length.

Historic and Current Range (Spawning and Rearing). The reported range includes UKL, the Clear Lake/Lost River system, the entire Sprague River, the lower 12 miles of the Sycan River, the lower Williamson River, and the upper Williamson River above Klamath Marsh. They are probably not abundant wherever they are found. They currently occur in waters that have been highly modified by dams, diversions, pollution, and introduced predators. Although they occur in the Klamath River below Klamath Falls, the Klamath largescale are mostly found above the Link River Dam.

Known Occurrences in the Project Area. Klamath Largescale suckers are found in UKL, but they primarily spawn and rear in the Williamson River and in the Sprague River (T. Tyler, 2007). The population that spawns in the Sprague River above Chiloquin Dam is currently believed to be relatively stable based on fish ladder monitoring data over the last quarter of a century (Buettner, as cited in Reclamation 2003).

3.3.1.1.2 Interior Redband Trout

Listing Status. Redband trout are part of an indigenous complex of trout that are found throughout the Upper Klamath River Basin. ODFW reports that this trout complex is included in the department's Klamath Lake gene conservation group of the Oregon Basin redband trout complex, which is listed as a state-protected species (Reclamation 2003). The USFS recognizes redband trout as a Region 6 Sensitive Species, and ODFW considers them to be a species of concern.

Life History. Redband trout that rear in UKL and the Klamath River migrate to tributaries to spawn. Redband trout reach maturity at age 3+ and typically spawn in the spring, but summer and fall spawning stocks also occur in tributaries with natural spring inflows. They all spawn in good-quality flowing water, with appropriate depth and velocity, over a

gravel substrate in which fish dig redds (nests) and deposit their eggs. After hatching and emerging from the gravel, migratory (adfluvial) redband trout may stay in their natal streams for more than a year before they migrate down to UKL or the Klamath River, where they reach maturity.

Known Occurrences in the Project Area. Redband trout spawning and the status of the population are not well documented in the Sprague River system. Spawning generally occurs during the spring, based upon the redband trout's springtime passage over Chiloquin Dam, and spawning is documented in also in the Seven Mile Creek and Wood River drainages. There is also a fall run of redband trout that migrates up the Sprague River to spawn (Reclamation 2003).

3.3.1.1.3 Upper Klamath Basin Lamprey

Listing Status. The Klamath River Basin is known to have a high diversity of lamprey species (*Lampetra* spp.), with four named species and an undescribed form that is also limited to the Klamath River Basin. These species are all unique to the Klamath Basin and are considered species of concern by ODFW (Reclamation 2003). In addition, the Pit-Klamath Brook lamprey and the Klamath River lamprey are USFS Region 6 Sensitive Species.

There are two non-parasitic forms with the common name Pit-Klamath Brook lamprey (*L. lethophaga* and *L. folletti*) and three parasitic forms commonly referred to as Klamath River lamprey (*L. similis*), the Miller Lake lamprey (*L. minima*), and the undescribed form that occupies UKL and migrates up the Sprague River (Logan and Markle 1993, as cited in Reclamation 2003; Lorion et al. 2000; Reid 2003, as cited in Reclamation 2003). The un-described UKL lamprey has historically been referred to as a land-locked Pacific lamprey (*L. tridentata*); however, it has been shown to be morphologically and genetically distinct from the coastal species and is more closely related to other Klamath River basin lampreys (Lorion et. al. 2000). The Miller Lake lamprey was believed to have been exterminated by chemical treatment of Miller Lake in 1958, but several populations of *L. minima* have been recently discovered, and the species distribution has expanded to include the Williamson and Sprague River drainages (Lorion et. al. 2000, as cited in Reclamation 2003).

Known Occurrences in the Project Area. Lamprey species reside in UKL and then move upstream from UKL to spawn. Lamprey has limited swimming and no jumping ability; they rely on their suction-cup mouths

to attach to objects and facilitate their movement through high-velocity areas.

3.3.1.2 Wildlife

3.3.1.2.1 American Peregrine Falcon

Listing status/life history. The American peregrine falcon is listed by ODFW as endangered (ODFW, 2004) and is listed by the USFS as a Region 6 Sensitive Species. These birds nest on cliffs averaging 230 feet high, within one mile of a riparian area. The nests are on ledges at 40 – 80 percent of cliff height, with view of the surrounding area. Primary prey is birds including bluejays, flickers, meadowlarks, pigeons, starlings, shorebirds, waterfowl, and other readily available species (Pagel, 2004).

Known Occurrences in the Project Area. Nesting habitat closest to UKL is present around the rimrock area near Highway 97.

3.3.1.2.2 Bufflehead

Listing status/life history. The bufflehead is listed by USFS as a Region 6 Sensitive Species that may occur near the project site. The bufflehead is a cavity nester, using either natural or woodpecker-excavated (especially flicker) cavities. Nests are usually found within 650 feet of water. Their diet consists of aquatic insects and seeds from aquatic vegetation in freshwater or brackish water habitats, crustaceans, snails and other mollusks, and fish primarily in the winter.

Known Occurrence in the Project Area. Bufflehead are known to occur throughout the Sprague River watershed and potentially the UKL area.

3.3.1.2.3 Northwestern Pond Turtle

Listing status/life history. The northwestern pond turtle is listed by the USFS as a Region 6 Sensitive Species that may occur near the project site. This turtle is one of only two native turtles occurring in Oregon. During warm weather, it is found in slow-moving bodies of water with rocky or muddy bottoms and aquatic vegetation. It often utilizes rocks or logs extending into the water for basking. Eggs are laid in summer in sandy uplands, ¼ mile or more from the water. Forested upland areas are used as hibernating habitat from approximately October through April, where they dig holes into the duff or conceal themselves under logs and debris for protection and thermo-regulatory purposes (Holland, 1994).

Known Occurrence in the Project Area. The northwestern pond turtle has been observed in UKL and AL riparian areas.

3.3.1.2.4 Pacific Fringe-Tailed Bat

Listing status/life history. The Pacific fringe-tailed bat is listed by the USFS as a Region 6 Sensitive Species that may occur near the project site. These bats utilize large diameter snags and live trees with deep furrowed bark, old buildings, tree hollows, and creviced rock outcrops (Western Bat Group Workshop, 1998). They forage over meadows, small water bodies, and streams.

Known Occurrence in the Project Area. Habitat used by these bats may occur near the project area.

3.3.1.2.5 Pacific Pallid Bat

Listing status/life history. The Pacific pallid bat is listed by the USFS as a Region 6 Sensitive Species that may occur near the project site. It is associated with ponderosa pine in southern Oregon (Cross, 1995). It utilizes large diameter snags and live trees with deep furrowed bark, old buildings, tree hollows, and creviced rock outcrops (Western Bat Group Workshop, 1998). This bat forages over meadows, small water bodies, and streams.

Known Occurrence in the Project Area. Habitat used by these bats may occur near the project area.

3.3.1.2.6 Klamath Pebblesnail

Listing status. The Klamath pebblesnail is listed by the USFS as a Region 6 Sensitive Species that may occur near the project area.

Known Occurrence in the Project Area. There was an historical site mapped for this mollusk in the Williamson River, but is likely to be wrong (described as the East Fork of the Sprague River). It is found at several sites in UKL, at springs around the lake margin, and in the Link River.

3.3.1.3 Environmental Effects

3.3.1.3.1 No-Action

Reclamation would not undertake this Federal funding action; therefore, there would be no impacts to native and resident fish and wildlife resources. Ongoing and future activities which impact fish and wildlife resources in UKL/AL, such as economic and industrial development and irrigation and farming activities, will continue.

3.3.1.3.2 Proposed Action

Construction activities associated with the installation of state-of-the-art fish screens would create some limited, temporary disturbances in UKL/AL shoreline habitats that could at some times be colonized by native and resident fish, birds and wildlife. Human activity and noise emitted from equipment and machinery could temporarily disturb fish and wildlife species which are sensitive to this activity, causing animals to potentially disperse to other unaffected areas for a limited period. Fish species would potentially be impacted if cofferdams need to be installed to de-water a site to construct a fish screen facility, but impacts would be minor as most diversion sites are very small in terms of capacity and disturbances within the aquatic environment are expected to be minor. Fish and wildlife resources would likely re-colonize fish screen construction areas after work is completed; consequently, there would be no net long-term loss of individuals to local populations. This proposed activity is not expected to displace the riparian shoreline habitat upon which these species depend since construction activities will be highly localized and occur in widely dispersed areas around UKL and AL. Impacts to native fish and wildlife are expected to be minor and temporary due to this proposed action.

3.4 THREATENED AND ENDANGERED SPECIES

Three fish species and the bald eagle (*Haliaeetus leucocephalus*) have historically occurred or currently occur near the proposed project area and are listed or were recently listed as Federal threatened and endangered (T&E) species (Reclamation 2003, Service 2004). Those T&E species are shortnose sucker (*Chasmistes brevirostris*), Lost River sucker (*Deltistes luxatus*), bull trout (*Salvelinus confluentus*), and formerly bald eagle. The Service recently announced on August 8, 2007, that the bald eagle was officially de-listed as a threatened species due to the successful conservation efforts undertaken nationwide since the species was originally declared threatened in 1967. Table 3-2 provides the Federal listed species that have been identified as occurring, either historically or currently in and around the UKL/AL area. In a letter dated December 26, 2006, Reclamation requested that the Service provide a list of species of concern that may be potentially impacted by implementing the UKL Fish Screen Program. The Service's list of T&E species is provided in Appendix B.

Table 3-2. Federal listed or former listed species that occur or may occur within the UKL/AL project site.

Common Name	Scientific Name	Federal Status ^a
Shortnose sucker	<i>Chasmistes brevirostris</i>	E
Lost River sucker	<i>Deltistes luxatus</i>	E
Bull trout	<i>Salvelinus confluentus</i>	T
Bald eagle	<i>Haliaeetus leucocephalus</i>	DL
Applegate's Milkvetch	<i>Astragalus applegatei</i>	E

a. E = endangered; T = threatened; DL = De-listed.

3.4.1 Shortnose sucker and Lost River sucker

Listing Status. The shortnose sucker and Lost River sucker were listed as federally endangered under the ESA on July 18, 1988 (Service 1988). These species are also listed as endangered by the State of Oregon and as Region 6 Sensitive Species by the USFS. These large, long-lived suckers are endemic to the UKB of Oregon and California and historically were abundant and widespread within their range (Service 1993).

The conversion of natural lake areas to agricultural use, damming of rivers, draining of marshes, instream flow diversions, water quality problems in UKL and its tributaries, loss of riparian vegetation, livestock grazing, water manipulation, and exotic species competition are factors that may have contributed to the population decline for these species (Service 1988).

Proposed Critical Habitat. Critical habitat has been proposed for both species of suckers, beginning at UKL and extending up the Sprague and Williamson Rivers about 60 miles to the town of Beatty, Oregon, near the confluence of the Sycan River. Proposed project activities occur within UKL; therefore, the project occurs within proposed critical habitat for Lost River and shortnose suckers. Critical habitat is comprised of essential features that will aid in the conservation of the species and areas within critical habitat may require special management or protection. These features are known as Primary Constituent Elements (PCEs) and in general, include: (1) space for individual and population growth, and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and generally, (5) habitats that are protected from disturbance or are representative of the historical geographical and ecological distribution of a species.

The draft Lost River and Shortnose Suckers Proposed Critical Habitat Biological Support Document (Service, 1993) tailors these features to specifically address the needs of the suckers. Critical habitat for suckers may provide one or all of the following: an adequate supply of good-quality water to support the life stages of the species; habitat that historically or currently can provide refuge from predators or stress; areas to feed, spawn,

or rear; or corridors that link these areas. The PCEs determined to be of most value to the Lost River and shortnose suckers include the following. Water: an amount of water of sufficient quality delivered to target areas in the watershed that will support the various life stages of the suckers, including wetland-related habitats that will maintain and enhance populations. Physical habitat: areas that are currently or were historically used by suckers to successfully escape stress and predation, spawn, rear, and feed, including areas that link these types of habitat, and seasonally used areas. Biological environment: adequate availability of food for all life stages, sufficient refuge from predators, a balance of native and introduced stocks, and habitats healthy enough to minimize competition and parasitism. The Service has proposed six critical habitat units (CHU) in the UKB. The proposed action is located in CHU #4 – UKL. CHU #4 is important since it includes spawning habitat and the majority of rearing habitat for larval, juvenile, sub-adult, and adult suckers.

Spawning Areas. Lost River sucker reach sexual maturity between the ages of six and 14 years. From early February through May, they begin their runs up tributary streams in order to spawn. Lost River females release eggs in riffles (stretches of stream that flow swiftly over cobble bottoms), depositing 44,000 to 231,000 eggs each. After hatching, larvae drift downstream.

Shortnose suckers reach sexual maturity at age six or seven. They begin their spawning runs in March, migrating up tributary rivers to spawn. Females broadcast tens of thousands of eggs in stretches of riffles and smooth runs of water, over gravel- or cobble-covered stream bottoms. Some suckers in both species spawn along the shores of lakes and springs.

The Williamson and Sprague Rivers are the primary spawning areas for populations of suckers in the UKB. One of the principal reasons for listing the sucker in 1988 was the recognition that Chiloquin Dam on the Sprague River blocked sucker spawning runs. Service (1988) estimated that Chiloquin Dam partially obstructs upstream access to 95 percent of the historical spawning and rearing habitat in the Sprague River¹. Prior to listing, the Williamson River/Sprague River spawning population was estimated to be as low as 2,650 shortnose sucker and 11,860 Lost River sucker (Reclamation 2003).

In the late 1980s, several studies examined the spawning distribution of Lost River and shortnose suckers in the Williamson and Sprague Rivers below Chiloquin Dam. These studies found both sucker species spawning in several riffles below the dam to

¹ The Department of the Interior, represented by Reclamation and Bureau of Indian Affairs (BIA), has worked collaboratively with several stakeholders to investigate possible options to improve fish passage at Chiloquin Dam, including total dam removal. After several years of study, stakeholders agreed to support the dam removal option. Reclamation provided the technical assistance and BIA has provided the funding leading to the implementation of the dam removal project under the following schedule: Construct new Pumping Plant for the owners of the dam, Modoc Point Irrigation District, from May 2007-May 2008; remove Chiloquin Dam from June –December 2008.

approximately RM 6.0 on the Williamson River (Bienz and Ziller, 1987; Coleman et al. 1989).

Rearing Habitat. After larvae (young-of-year) adfluvial sucker stocks hatch from eggs and emerge from the gravel nest sites, they emigrate from the river by means of passive drift to UKL. Larval out-migration from the Williamson River to UKL can begin in May and is generally completed by the end of July. In UKL, larvae are known to occupy primarily near-shore shallow water habitat (less than 20 inches deep) (Reclamation 2003). They are generally found in higher densities associated with emergent aquatic vegetation or some form of submerged structure, such as logs or large rocks (Klamath Tribes 1996, as cited in Service, 2002). Potential larval habitat has been quantified adjacent to the mouth of the Williamson River. It is believed that larvae emigrating from the Williamson River move east then south along the shoreline. Because of the large numbers of spawning adult suckers in the Williamson River, the area around the mouth of the Williamson is believed to be crucial nursery habitat for sucker larvae (Service, 2005).

Juvenile Habitat. Young-of-year juvenile suckers (i.e., 1 to 4 inches total length) generally occupy UKL near-shore shallow water habitats less than about 3.5 feet deep, and mostly less than 20 inches deep (Service, 2002). Juveniles are often found in un-vegetated habitats, primarily over rocky substrates, including rock, gravel, and gravel/sand mix. Scientific investigations recently have provided evidence that juveniles also use emergent vegetation along the near shoreline areas (Service, 2002).

Adult Habitat. Fish distribution studies have found adult shortnose and Lost River suckers in a wide variety of habitats throughout the Klamath River basin.

Tolerance to Degraded Water Quality. Adult suckers experience signs of temperature-induced stress and temperature-induced mortality at a high-stress temperature of 28 °C (82 °F) (Reclamation 2003). Suckers low-stress threshold, at which behaviour is altered, occurs when water temperatures reach 25 °C (77 °F). In addition, the DO low-stress and high-stress threshold criteria for suckers are 4 milligrams per liter (mg/L) and 6 mg/L (Loftus 2001, as cited in Reclamation 2003). Suckers exhibit low- and high-stress thresholds for pH at 9.0 and 9.75 (Reclamation 2003).

Known Occurrences in the Project Area. Shortnose and Lost River suckers are widely distributed in UKL and AL and spend the majority of their life history in these water bodies.

3.4.2 Bull Trout

Listing Status. Bull trout were listed by the Service as threatened on June 10, 1998 (Service, 1998). Bull trout critical habitat was designated in the Klamath River Basin in September 2004. Bull trout populations are threatened by habitat degradation, passage

restrictions at dams, and competition from non-native brown and brook trout (Service, 1998).

Historically, bull trout inhabited the lower Sycan River, remaining today only in a few headwater tributaries above the Sycan Marsh. They also currently occupy a number of small headwater tributaries of the Sprague River and UKL. Bull trout are absent from UKL and AL today

Life History/Occurrence. Bull trout populations are known to exhibit two distinct life history forms in the Klamath Basin: resident and fluvial. Resident bull trout spend their entire life cycle in the same (or nearby) streams in which they were hatched. Fluvial populations spawn in tributary streams where the young rear from one to four years before migrating to a river, where they grow to maturity.

3.4.3 Bald Eagle

Listing Status. Bald eagles in the lower 48 states were first protected under the 1940 Bald Eagle Protection Act, and then were federally listed as endangered in 1967. In 1995, the bald eagle was reclassified as threatened in all of the lower 48 states. The bald eagle was proposed for delisting on July 6, 1999. The Service recently announced bald eagles were de-listed as a threatened species on August 8, 2007.

Historical Status and Current Trends. The bald eagle is the only eagle unique to North America. It ranges from central Alaska and Canada south to northern Mexico. The majority of nesting bald eagles in Oregon occur in the following areas: Columbia River below Portland, the Oregon coast and Coast Range, the High Cascades, Klamath Basin, and the upper Willamette River Basin. A nesting survey found 401 breeding pairs in Oregon and 40 on the Washington side of the Columbia River in 2002. Population goals in eight of ten recovery zones in Oregon have been met or exceeded. Wintering bald eagles are found throughout the state, but concentrations occur in areas with dependable food supplies such as Klamath and Harney Basins and along the Snake and Columbia Rivers (ODFW, 2004).

Breeding and Wintering Habitat. Bald eagle nest site selection varies widely from deciduous, coniferous, and mixed forest stands. Nest trees are usually large-diameter trees characterized by open branching and stout limbs. Nests are in dominant or co-dominant in trees often located near a break in the forest such as a burn, clearcut, field edge (including agricultural fields), or water. The majority of nest sites are within one-half mile of a body of water such as coastal shorelines, bays, rivers, lakes, farm ponds, or dammed up rivers (beaver dams, log jams, etc.) and have an unobstructed view of the water. Bald eagle habitat occurs primarily in undeveloped areas with little human activity.

Winter foraging areas are usually located near open water on rivers, lakes, reservoirs, and bays where fish and waterfowl are abundant, or in areas with little or no water (rangelands,

barren land, tundra, suburban areas, etc.) where other prey species (rabbit, rodents, deer, carrion) are abundant. Communal roost sites contain large trees (standing snags and utility poles have also been used) with stout lower horizontal branches for perching. Up to 100 bald eagles may use these roost sites at night and during the day, especially during inclement weather.

Occurrence in Project Area. Bald eagle nesting sites within the proposed Project area are shown in Figure 7. Most bald eagle nesting sites are found on the west side of UKL. UKL diversions where fish screens could be constructed under the proposed action may be within line of site of some bald eagle nest sites particularly on the northwest and southwest shore of UKL.

3.4.4 Applegate's Milkvetch

Listing Status. The Service listed this plant species as endangered on June 24, 1993 (Service, 1993). This plant species is found in limited areas within Klamath County, Oregon. Survival of this species is threatened primarily by the loss of habitat from past and potential development and road construction.

Life History/Occurrence. This is a perennial herbaceous plant of the pea family (Fabaceae) which grows to approximately one foot in height and reproduces only by seed (Service, 1993). The anthers and stigma ripen simultaneously, enabling self-pollination. Plants produce light purple, pea-like flowers, and 0.3-0.5 inch seed pods during June and July.

Applegate's Milkvetch historically occurred at three sites near Klamath Falls, Oregon. Extensive agriculture practices apparently extirpated one site near Keno, Oregon. This plant now remains at only two sites: the largest population is limited to six acres and is one mile south of downtown Klamath Falls; the second extant population occurs on less than one acre on Oregon's Klamath Wildlife Management Area about six miles from the first site.

3.5 THREATENED AND ENDANGERED SPECIES EFFECTS

This section refers to the direct and indirect effects of this proposed Federal action on ESA listed or former ESA listed species (i.e. bald eagle) and any designated and/or proposed critical habitat that, together with the effects of other activities that are interrelated or interdependent with that action, will be added to the environmental baseline. Reclamation will complete site specific evaluations to document effects to ESA threatened and endangered species and complete any necessary ESA consultations through the through the site specific NEPA process tiered from this programmatic EA.

ESA listed suckers are typically impacted by actions which may alter migration, affect spawning ability and access, disturb feeding and rearing patterns, prevent escape from predation, elevate

risks of physical harm or injury, result in entrainment, cause avoidance behavior, and affect water quality. Several, all, or none of these affects may result, depending on the type of action proposed.

3.5.1 Threatened and Endangered Species Critical Habitat

3.5.1.1 No Action Alternative

Reclamation would not undertake this funding action; therefore construction related effects on ESA listed species due to this Federal action would not be undertaken. Endangered suckers would continue to be exposed to the continued risk of entrainment into UKL and AL diversions as long as these diversions remain unscreened. As indicated above, ODFW statewide fish screen program is available to provide fish screening assistance to private landowners.

3.5.1.2 Proposed Action

Table 3.3 shows the variety of construction activities associated with the installation of fish screens and a determination of the likelihood these activities will result in adverse effects to listed species.

Reclamation would provide funding for the construction of fish screens which would conform to sucker criteria for approach and sweeping velocities, established by Service, ODFW, and CDFG in July 2005. Such criteria are consistent with the criteria National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) has specified to protect juvenile salmon fish species in the Pacific Northwest. By adhering to these criteria, fish screens can significantly reduce entrainment/impingement and potentially the long-term survival of endangered Lost River and shortnose suckers and native fishes, including redband trout, greater than 30 millimeters (mm) in total length as follows:

- Ensure that early young-of-year fish are not damaged by the effects of impingement onto the surface of a fish screen;
- Allow weaker swimming juvenile fish to safely swim away from the screen surface and escape entrainment;
- Establish acceptable mesh sizes to keep fish from escaping through the mesh openings.

NOAA Fisheries screen criteria, upon which these sucker criteria are based, specifies that a 0.4 feet/second (fps) approach velocity in concert with an effective bypass return system will provide adequate protection for fish greater than 30 mm in size. Depending on particular UKL site conditions, however, it may not always be practicable to have an effective bypass return system such as when a diversion is

located in slack water conditions (e.g., head of canals). Fish can potentially become impinged upon the screen surface when a safe bypass return system is not practicable. In these unique cases, ODFW will adhere to the interim fish screen recommendation to design and construct fish screens with approach velocities of 0.2 feet per second (fps) to allow weaker swimming juvenile fish to escape entrainment into and impingement onto the surface of the screen.

Fish screens which adhere to these criteria could allow the earliest larval life stage of suckers to potentially pass through these screens because they are less than 30 mm in length and have very limited swimming ability to escape the surface of a screen. FWS, ODFW, and CDFG recognize that properly designed screens cannot physically protect the earliest larval sucker life stage from the risks of entrainment due to their very small size (i.e. less than 20 mm) and limited swimming abilities. However, studies (Bothwick and Weber, 2001) suggest that when positive flow hydraulics for approach and sweeping velocities are created in front of the screen, larval size fish (suckers) can be successfully bypassed because direct physical contact with the screen surface is minimized.

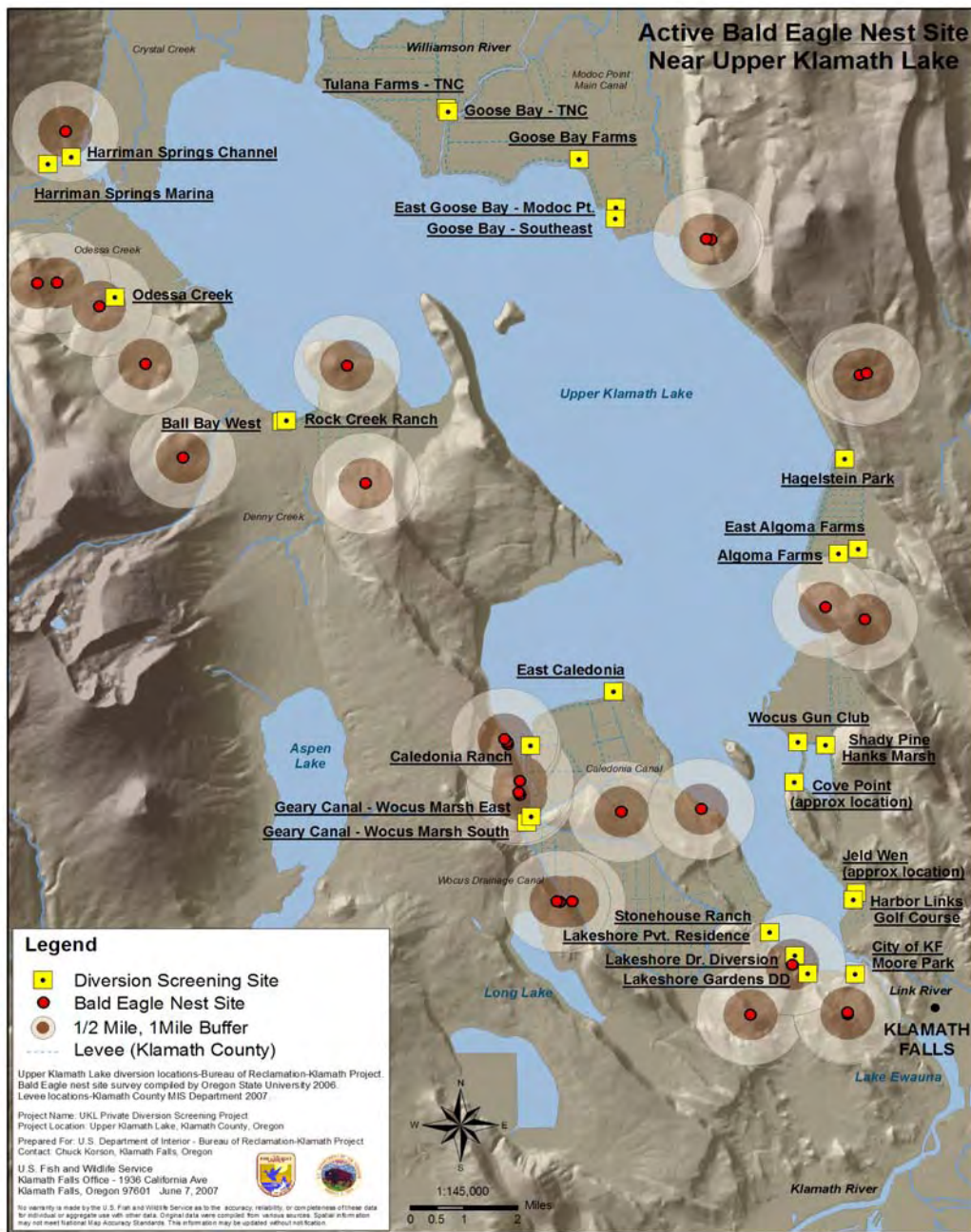


Figure 7 – Active Bald Eagle Nesting Sites near UKL.

Table 3-3. UKL Fish Screen Construction Activities and Determinations of Adverse Affects to Threatened and Endangered Species

Proposed Action	Adverse Affects to Listed or Proposed Threatened/Endangered Species and Critical Habitats				
	LOST RIVER AND SHORTRIVER SUCKERS	Bald eagle	Bull trout	BULL TROUT Critical Habitat	Sucker Proposed critical habitat
Access/staging/hauling	Yes	Yes	No	No	Yes
Cofferdam (remove/install)	Yes	Yes	No	No	Yes
In-water work	Yes	Yes	No	No	Yes
Construction	Yes	Yes	No	No	Yes

3.5.2 Lost River/Shortnose Sucker Effects

Lost River and shortnose suckers of all life stages are susceptible to the impacts of construction activities associated with the installation of fish screens on UKL/AL diversions. Some juvenile and adult suckers may be directly harmed, killed, or displaced during in-water work activities due to temporary increases in turbidity or when machinery is used to construct de-watering structures on the lake bottom. Once a fish screen is installed and is operating, the larval sucker life stage may be directly harmed since (1) they may be entrained through the screen mesh openings due to their very small size (i.e. less than 20 mm), and (2) they may be impinged upon the screen surface due to their very limited swimming abilities.

Such impacts to adult and juvenile suckers would likely be small in magnitude since fish will likely swim away to a large extent to avoid construction areas, and escape machinery and/or vibration noise. In-water construction work will mostly occur during the non-irrigation season in late summer, fall, and early winter months when the smallest and most vulnerable larval and juvenile size classes are not present, and after lake adult spawning activities have ended. Larval fish impacts can be minimized in cases where favorable hydraulics exists in front of the screen to create a sweeping flow across the screen surface such that larvae can be returned safely back to UKL/AL.

In general, construction activities could potentially impact ESA listed sucker species or the critical habitat upon which they depend given the need for contractors to conform to in-water permit conditions under the CWA and Oregon Fill-Removal statutes. However, the

impacts are expected to result in a minor amount of take of ESA listed suckers which could have short term impacts on the species.

The overall UKL FS Program, through the installation of state and Federal approved fish screens, would eliminate an anthropogenic activity that has been identified to be one factor leading to the decline of endangered sucker populations in the UKB. Suckers and native fish survival for juvenile, sub-adult, and adult life stages would be enhanced by substantially reducing the effects of entrainment in UKL and AL. This Federal action, over the long term, could potentially help lead to the recovery of endangered sucker populations in UKL and AL.

3.5.3 Bald Eagle Effects

A proposed project may affect bald eagles through actions that might disrupt breeding activities, alter suitable habitat, impact the prey base, and increase the likelihood of chick predation. Construction activities may create noise levels that can potentially startle eagles from their nests, and cause eagles to abandon nests completely, or avoid normal routines and habitats. The effects of these disturbances increase in magnitude during the nesting season, since eggs and/or chicks may be present. Adults that startle from the nest may crush or knock eggs or chicks out of the nest or may remain absent from the nest for too long – either of these behaviors can affect the reproductive success of the nest for that year.

In the Klamath basin, bald eagle breeding occurs from January 1 to August 15. Bald eagle nests are found throughout the proposed project area and are closest to potential fish screen diversion sites in especially the northwest and southwest portion of the lake. Some of these diversion sites may be between ¼ and ½ mile line-of-sight of bald eagle nests.

Fish screen construction activities that can adversely affect bald eagles consist of access, staging and hauling, in-water work, and removing/installing cofferdams. Noise-generating activities associated with fish screen construction may impact the bald eagle through blasting, rock drilling, hauling construction material, and use of heavy equipment. Increased foot and vehicle traffic also has the potential to impact this species. Typical noise emissions from construction equipment such as trucks, front-end loaders, bulldozers, excavators, and other heavy equipment, which may be used, may range from 70-85 dBA at a 50-foot distance (Parsons, 2003).

Noise decreases by 6 dBA every time the distance from the source is doubled. This effect is influenced by topography (e.g., water carries sounds better than ground or tree cover). Without taking topography into account, a noise level of 95 dBA at any potential UKL fish screen construction site would result in 63 dBA approximately ½ mile from the source. A study conducted in 1987 evaluated the disturbance effects of noise on eagles (Bottorff et. al., 1987). The study determined that acceptable noise levels for bald eagles were not to exceed 65 dBA or 10 dBA above ambient peak levels within 0.5 miles of any construction area.

Some Bald Eagle nests may be within the ½ mile buffer zone for line-of sight (Figure 7). The loudest pieces of equipment would have a combined noise level of 95 dBA at a 50-foot reference distance. This is a conservative noise estimate since all pieces of equipment rarely operate all at once.

UKL and AL diversion sites within the ½-mile buffer for eagle nest sites appear to include Geary Canal, Odessa Creek, Harriman Springs, and Caledonia Marsh. The Caledonia Marsh diversion is no longer a functioning water withdrawal site due to the recent Caledonia dike failure in 2006 and subsequent flooding of the adjoining ranchlands. At these other diversions, the equipment and workers needed to install fish screens would be most prominent and will produce the most noise risk at the Geary Canal diversion since it is the largest remaining unscreened diversion (i.e. 60 cfs) on UKL. The Odessa Creek and Harriman Springs diversions are much smaller (i.e. 10 cfs and 3 cfs, respectively) and, therefore, the size and type of equipment needed to construct screens at these sites will be much less intense and emit much less noise in the vicinity of bald eagle nests within line of site.

Noise levels at the largest UKL diversion site (i.e. Geary Canal) would reach about 95 dBA if all the equipment operated at once, but assuming that the equipment operates intermittently, a more reasonable noise estimate is 70 to 85 dBA. By using the noise formula, a noise level of 95 dBA at the construction site at any one time would produce 70 dBA ¼ mile away and 63 dBA ½ mile away. Based on distance from the Geary Canal diversion, noise levels at bald eagle nests within line of site are predicted to be under the acceptable 65-dBA threshold. In addition, the eagles are likely well habituated to the current level of noise associated with Oregon State Highway 140 in the vicinity of Geary Canal. Background noise associated with traffic on highways and freight rail cars has been estimated to be 70 dBA (USDOT, 1998). The eagles, therefore, are likely habituated to existing noise levels that are very similar to those that will be generated during construction of the Geary Canal fish screen. Based on topography and distance, noise levels at any of the remaining UKL diversion sites within the line of sight zone for a bald eagle nest should also be well below 65 dBA.

To minimize noise effects to nests, construction work would for the most part be scheduled late summer or fall for the larger UKL fish screen sites when low water occurs and where intense activities such as excavation and pouring concrete are carried out. These heavier construction activities are expected to occur at a time to avoid the particularly sensitive portion of the eagle nesting season (January 1 to August 15).

It is possible that some of the lighter-type fish screen component work at smaller diversion sites could be done during the winter and/or spring, but in this case construction equipment would be small pickup trucks and hand-held power tools as opposed to large trucks and excavators. Pump screens fall into this category of small installations which ODFW

reports can occur any time of the year, and which typically occurs before the start-up of the irrigation season in early spring. In the case of these smaller-type fish screen projects, construction could occur during the bald eagle nesting and fledgling season from Jan 1 to August 15. However, the noise emitted from small trucks and hand tools would be well below thresholds determined to disturb nesting success and bald eagles are likely habituated to low level noises and vehicular/human activities which could occur within the vicinity of bald eagle nests around UKL.

Nest trees or roosting habitat will not be removed when fish screens are constructed, consequently these types of habitat will not be adversely affected.

3.6 BULL TROUT EFFECTS AND BULL TROUT DESIGNATED CRITICAL HABITAT

On June 10, 1998, the Service listed the Klamath River population segment of the bull trout and the Columbia River population segment as threatened (Service, 1998). No bull trout are currently found in the project area and therefore, they should not be affected by the proposed UKL FS Program.

The Service's final rule designating critical habitat for the bull trout took effect on November 5, 2004 (Service, 2004). AL was designated as a critical habitat unit for the bull trout to allow for connectivity between populations. Bull trout critical habitat will also not be affected because it is not within the area that would be impacted by the project.

3.7 APPLGATE'S MILK-VETCH EFFECTS

This plants species will not be affected by the proposed UKL FS Program since it is not located within the UKL/AL area

3.8 EFFECT DETERMINATIONS

3.8.1 Lost River and Shortnose Suckers

The proposed project will result in a "*may affect, is likely to adversely affect*" determination under the ESA for both the Lost River and shortnose suckers based on the following: (1) heavy equipment needed to construct and remove the cofferdam may smother, trap, injure, or kill one or more fish during construction; (2) dewatering of any irrigation canal during fish screen construction is also likely to entrain or kill one or more fish; and (3) larval sized suckers can be entrained and/or impinged when a fish screen is built according to Federal and state accepted interim fish screen criteria. Despite the overall long-term benefit of the UKL FS Program, it is impossible to ensure that not one sucker of either species will be harmed or killed during the course of this project. This determination requires Reclamation to conduct formal Section 7 consultations with the Service under the ESA.

3.8.2 Lost River and Shortnose Sucker Proposed Critical Habitat

The proposed project may affect proposed sucker critical habitat. Several of the PCEs important to the integrity of critical habitat will be briefly impacted as a result of the project. These elements include short-term losses in habitat near and below a fish screen site which may provide refuge from stress and predators, and a potential short-term decrease in water quality as sediments are disturbed when cofferdams are installed and removed and when fish screen construction work occurs. This determination requires that informal conferencing be initiated with the Service.

Several of the PCEs important to the integrity of critical habitat (i.e., water, physical habitat, and biological features) may be briefly and slightly altered as a result of the proposed action. These elements include short-term, localized losses in habitat near and below a fish screen site which may provide refuge from stress and predators, and a potential short-term decrease in water quality as sediments are disturbed when cofferdams are installed and removed and when fish screen construction work occurs. These are only temporary alterations to any PCEs; therefore, the proposed action is not likely to adversely modify or destroy proposed sucker critical habitat. This determination requires that informal conferencing be initiated with the Service.

3.8.3 Bald Eagle

The Service has indicated that bald eagles will continue to be protected under the Bald and Golden Eagle Protection Act (Eagle Act) and the Migratory Bird Treaty Act (MBTA). In May 2007, the Service clarified the regulations implementing the Eagle Act and MBTA and published a set of National Bald Eagle Management Guidelines (Guidelines) to advise landowners, land managers, and others who share public and private lands with bald eagles when and under what circumstances the protective provisions of the Eagle Act may apply to their activities. The Guidelines are intended to help minimize impacts to eagle affecting their ability to forage, nest, roost, breed, or raise young.

Under the former ESA listing criteria, the proposed project will result in a “*may affect, is not likely to adversely affect*” determination for the bald eagle based on: (1) the primary prey base for the eagle (waterfowl) will not be affected; (2) snags and/or live trees large enough for nesting or roosting will not be removed as a result of the project; (3) the potentially greatest noise associated with the project within the ½ line of site buffer will occur outside the eagle nesting season of January 1 to August 15; and (5) the eagles within the ½ mile line of site to a potential fish screen site are likely habituated to the low level noises which will emanate from a particular construction event. Therefore, the proposed UKL FS program is not expected to disrupt and/or disturb bald eagles by substantially interfering with normal breeding, feeding, or sheltering behavior.

3.8.4 Bull Trout and Bull Trout Designated Critical Habitat

The proposed project will have “*no effect*” to either bull trout or designated bull trout critical habitat, because neither exists in the project area. No coordination with the Service for this species and its habitat is necessary.

3.8.5 Applegate’s Milk-vetch

The proposed project will have “no effect” to Applegate’s Milk-vetch, because it does not exist in the project area. No coordination with the Service is necessary.

3.9 WETLANDS

3.9.1 Affected Environment

The term “wetlands” is used to describe the wide variety of habitats more commonly described as bogs, swamps, fens and marshes. Wetlands occur in areas between terrestrial and aquatic systems and “are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (Federal Interagency Committee for Wetland Delineation, 1989).

UKL and AL have several bands/colonies of wetland/riparian plants along the margin of the reservoir shoreline. Wetland/riparian plants typically found along reservoir shoreline margins are Douglas spirea and willow (sp.). In deeper water, free-floating and submergent species such as pondweed, watercress, and duckweed are common, and there are also a few species which are rooted in the mud underwater, notably the wocus lily. Closer to shore are species able to survive seasonal fluctuations in water levels, such as the buttercups, speedwells, smartweeds, water parsley, plantains, several grass species as well as sedges, rushes (*Scirpus and Juncus sp*), and cattails (*Typha sp.*).

Wetlands in the UKB provide highly valuable wildlife habitat, the UKB is a critical stopover for waterfowl using the Pacific Flyway as well as supporting a large seasonal population. The wetlands of the region also provides highly valuable habitat to raptors, particularly bald eagles. The Klamath Basin is home to one of the largest populations of wintering bald eagles in the lower 48 states. Mammals, amphibians, reptiles, fish and aquatic mollusks all use wetlands and many are dependent on them for their survival.

3.9.2 Environmental Effects

3.9.2.1 No-Action

Reclamation would not undertake this Federal funding action; therefore, there would be no impacts to wetland/riparian resources.

3.9.2.2 Proposed Action

Construction activities associated with the installation of state-of-the-art fish screens in UKL/AL would create some limited, temporary disturbances in shoreline wetland/riparian habitat areas. This activity is not expected to significantly impact and result in new losses of the wetland/riparian shoreline habitat since construction activities will be highly localized and occur in widely dispersed areas around UKL and AL. Impacts to wetland/riparian habitats are not expected to be directly or cumulatively significant.

3.10 CULTURAL RESOURCES

3.10.1 Affected Environment

Cultural resources is a term used to describe both ‘archaeological sites’ depicting evidence of past human use of the landscape and the ‘built environment’ which is represented in structures such as dams, roadways, and buildings. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation which outlines the Federal Government’s responsibility to cultural resources. Other applicable cultural resources laws and regulations that could apply include, but are not limited to, the Native American Graves Protection and Repatriation Act (NAGPA), and the Archaeological Resources Protection Act (ARPA). Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking listed on cultural resources on or eligible for inclusion in the National Register of Historic Places (National Register). Those resources that are on or eligible for inclusion in the National Register are referred to as historic properties.

The Section 106 process is outlined in the Federal regulations at 36 CFR Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking will have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking will have on historic properties, and consult with the State Historic Preservation Office (SHPO), to seek concurrence on Reclamation’s findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

The nature of historic properties in the project area is unknown at this time; however, previous studies within the geographic region provide strong circumstantial evidence that potential historic properties may be located in the project area. Within the geographic area of the Klamath Basin, evidence for prehistoric occupation is available as far back as 7500 before present (BP) (Mack, 1991). Early occupation sites reflect an intense focus on migratory bird and mammal exploitation. Later components (ca. 3800 BP) reflect a shift from dependence on bird and mammal exploitation to fisheries resources (Mack, 1991).

Ethnographically, the Klamath Basin was occupied by the Klamath Tribes, who comprise the Klamath Indian Reservation. These contemporary tribes are the Klamath Indians, Modoc Indians, and the Yahooskin Band of the Snake Traders (Allison, 1994). The Klamath people occupied territories near Klamath Marsh, the banks of Agency Lake, near the mouth of the Lower Williamson River, on Pelican Bay, adjacent the Link River, and in the uplands of the Sprague River Valley. The Modoc's lands included the Lower Lost River, around Clear Lake, and the territory that extended south as far as the mountains beyond Goose Lake. The Yahooskin Bands occupied the area east of the Yamsay Mountain, south of Lakeview, and north of Fort Rock.

Historic uses of the Klamath Basin reflect the development and use of the region's abundant natural resources. Like other regions in the far West, agriculture, hydroelectric power, and logging serve as the basis for Klamath Basin's development and economy. Six hydroelectric power plants have been constructed along the river that emanates from Upper Klamath Lake. Ranchers and farmers in the Klamath Basin working with the Federal Government established an agricultural center by draining marshes and reconfiguring river flows. Today approximately 1,400 farms are found throughout the Klamath Project and more than 240,000 acres are cultivated.

3.10.1.1 No Action

Under the no action alternative, Reclamation would not provide Federal appropriations for the installation of a fish screens on irrigation intakes at AL and UKL. If no Federal appropriations are applied and the action is not occurring on Federal land administered by Reclamation, Reclamation has no commitment to comply with Section 106 of the NHPA.

3.10.1.2 Proposed Action

Reclamation has determined that the proposed action is the type of action that has the potential to affect historic properties. As a result of this determination, Reclamation will initiate and complete the NHPA Section 106 process as follows:

- (1) Conduct a record search with the appropriate Oregon SHPO for the areas in and around AL and UKL to identify previously recorded historic properties.
- (2) When cost-share applicants are approved and design plans are finalized, Reclamation will evaluate the individual applicants request for the purposes of completing the NHPA Section 106 process.
- (3) In order to comply with the regulations at 36 CFR Part 800, Reclamation may choose to visit the location of the undertaking to perform a field survey, and if necessary conduct subsurface testing and subsequent evaluation of the area to help identify cultural resources and determine whether they are eligible for inclusion in the National Register.
- (4) Reclamation will consult with the SHPO and request their concurrence on a finding of effect.
- (5) Reclamation will also consult with Indian tribes to identify sites of religious or cultural significance, and consult with any individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.
- (6) Reclamation may also be required to satisfy specific mitigation requirements to address adverse effects to historic properties from a proposed undertaking prior to the delivery of Federal appropriations.

3.11 INDIAN TRUST ASSETS

The United States government has a unique legal and political relationship with American Indian tribal governments. The basis for this relationship is derived from the Constitution of the United States and is more fully set out in such documents as treaties, federal statutes, and executive orders. Court decisions have analogized this relationship, in some cases, to one with a private trustee or fiduciary, with the United States as the trustee, the respective Indian tribe as the beneficiary, and the land or other property held by the United States as the corpus or body of the trust. This role of the United States government is commonly referred to as the Indian trust responsibility.

Secretarial Order 3215 defines Indian trust assets (ITAs) as "lands, natural resources, money, or other assets held by the Federal government in trust or that are restricted against alienation for Indian tribes and individual Indians." On October 14, 1864, the Klamath Indians, the Modoc Indians, and the Yahooskin Band of Snake Paiute Indians signed a treaty with the United States agreeing to forgo claims to their larger aboriginal territory in exchange for a smaller land base, certain hunting, fishing, and gathering rights, and financial support over a period of at least 20 years.

Congress terminated the Klamath Indian Reservation in 1954, but left the tribes' hunting, fishing, and gathering rights and supporting water rights intact in the UKB and within the proposed project area. The 1864 treaty provides for fishing rights and has been interpreted to extend to the interaction of fish and water. The Klamath Tribes water rights include the right to certain conditions of water quality and flow to support all life stages of fish. Although these rights have not been quantified, the proposed action to reduce sucker entrainment into UKL and AL diversions appears to be one way to conserve fishing rights and hence, protect the Klamath Tribes ITAs.

3.11.1 No-Action

Under the no action alternative, Reclamation would not provide Federal appropriations for the installation of a fish screens on irrigation intakes at UKL and AL.

3.11.2 Proposed Action

The Proposed Action would have a potential beneficial impact to fish populations in UKL and AL by reducing entrainment at private diversions. Reducing fish entrainment at UKL and AL diversions appears to be one way to aid in conserving and protecting the Klamath Tribes trust assets and this action will provide an overall beneficial impact to ITAs in the project area.

3.12 ENVIRONMENTAL JUSTICE

In February 1994, Executive Order 12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” (59 FR 7629, 1994), directed Federal agencies in the Executive Branch to consider environmental justice (EJ) so that their programs would not have “disproportionately high and adverse human health or environmental effects” on minority and low-income populations. The Council on Environmental Quality (CEQ) later provided additional guidance for integrating EJ into the NEPA process in a December 1997 document, *Environmental Justice Guidance under the National Environmental Policy Act* (CEQ 1997).

3.12.1 No-Action Alternative

The No Action Alternative would not cause impacts, adverse or otherwise, on the human environment. As a result, there would be no disproportionate negative impacts on minority or low-income populations.

3.12.2 Proposed Alternative

The Proposed Action will have minor environmental impacts; and therefore, no disproportionately high and adverse human health or environmental effects on

minority and low-income populations are anticipated. The communities surrounding Klamath Falls and UKL and AL would likely see a small economic benefit from the temporary presence of construction workers and the increase in local spending patterns.

Chapter 4: Consultation and Coordination with the Public and Others

4.0 PUBLIC SCOPING AND ISSUES

Reclamation initiated public scoping for the UKL FS Program on October 31, 2006. The public scoping period was open for a 30-day comment period. Reclamation distributed a public scoping letter to more than 600 individuals and groups to identify environmental issues/concerns and to seek suggestions regarding reasonable alternatives to the proposed action and need for the UKL FS Program. The Herald and News paper in Klamath Falls, Oregon published an article about the purpose of the UKL FS Program in November 2006. Reclamation's public scoping period closed on November 30, 2006.

Reclamation received seven comment letters during the 30-day scoping period; six individuals provided specific written comments. Comment letters from five individuals supported Reclamation providing public funds to help screen private diversions on UKL/AL and provide protection for endangered suckers in UKL/AL. One comment suggested that other factors are contributing to the decline in sucker populations, and that providing funds to screen UKL/AL diversions is not prudent.

4.1 U.S. FISH AND WILDLIFE SERVICE

The Service was contacted in December 2006 to obtain the ESA Threatened and Endangered Species list. Reclamation will submit this EA to the Service to initiate the ESA Section 7 Consultation process starting in July 2007.

4.2 KLAMATH FISH PASSAGE TECHNICAL COMMITTEE

Reclamation has formed the KFPTC and routinely meets with the group to address fish screen and passage issues on the Klamath Project. Reclamation has kept the KFPTC apprised of the initiative to develop and implement the UKL/AL Fish Screen Program.

Chapter 5: Preparers/Bibliography

5.0 LIST OF PREPARERS

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APPENDIX 1- Environmental Evaluation Checklist for Upper Klamath Lake Fish Screen Program.

**ENVIRONMENTAL EVALUATION CHECKLIST
UPPER KLAMATH LAKE FISH SCREEN PROGRAM**

KLAMATH BASIN AREA OFFICE

Area Office Control No:

DATE:	PROPOSING AGENCY/APPLICANT: KBAO – BOR
PROJECT: Klamath Project;	
EXCLUSION CATEGORY:	<i>SAMPLE</i>
NATURE OF ACTION:	<i>SAMPLE</i>

EVALUATION OF CRITERIA FOR CATEGORICAL EXCLUSION		No	Yes	Uncertain
1.	This action or group of actions would have a significant effect on the quality of the human environment.			
2.	This action or group of actions would involve unresolved conflicts concerning alternative uses of available resources.			
EVALUATION OF EXCEPTIONS TO ACTIONS WITHIN CATEGORICAL EXCLUSION				
1.	This action would have significant adverse effects on public health and safety.			
2.	This action would have an adverse effect on unique geographical features such as: wetlands; Wild or Scenic Rivers, or Scenic Rivers; refuges; floodplains; rivers placed on the Nationwide River Inventory; or prime or unique farmlands.			
3.	This action will have highly controversial environmental effects.			
4.	This action will have highly uncertain environmental effects or involve unique or unknown environmental risk.			
5.	This action will establish a precedent for future actions.			
6.	This action is related to other actions with individually insignificant, but cumulatively significant effects.			
7.	This action will affect properties listed, or eligible for listing, in the National Register of Historic Places.			
8.	This action will adversely affect a species listed, or proposed to be listed, as endangered or threatened.			
9.	This action threatens to violate Federal, State, local or Tribal law or requirements imposed for protection of the environment.			
10.	This action will affect Indian trust assets.			

11.	This action will affect Indian sacred sites.			
12.	This action will disproportionately affect minority or low income populations (E.O. 12898).			

DESCRIPTION OF PROPOSED ACTION/COMMENTS:

SAMPLE

Discovery Notice - In the event that any cultural and/or paleontological site (historic or prehistoric) is discovered, it shall be immediately reported to a Bureau of Reclamation archaeologist. An evaluation of the significance of the discovery will be made by the archaeologist to determine appropriate actions to be taken to prevent loss of significant cultural or scientific value.

Native American Graves Protection Repatriation Act (NAGPRA) Notice - Any person who knows, or has reason to know, that they have inadvertently discovered possible human remains on Federal or Tribal lands must provide immediate telephone notification of the inadvertent discovery to the Bureau of Reclamation archaeologist at (916)978-5040 or (916)978-5041. Work will stop until the proper authorities are able to assess the situation onsite. This action must promptly be followed by written confirmation to the responsible Federal agency official with respect to an inadvertent discovery on Federal lands. If the inadvertent discovery is on tribal lands, it must be reported to the responsible Indian tribal official. This notification is required under the Native American Graves Protection and Repatriation Act (P.L.101-60) of November 1990.

NEPA ACTION TAKEN:

___ **CE Checklist** - The proposed action meets the criteria, as defined in 516 DM 2 Appendix 1 or 516 DM Appendix 9, and qualifies as a categorical exclusion. The action will not significantly affect the quality of the human environment. It is excluded from documentation in an Environmental Assessment (EA) or Environmental Impact Statement (EIS).

...or...

The proposed action does not meet the criteria for a categorical exclusion. Further environmental review and analysis is required. The following document should be prepared: **EA** ___ **EIS** ___

PREPARER'S NAME AND TITLE:

CONCURRENCE:

Concur with Item 7: _____ Date: _____
Archaeologist

Concur with Item 8: _____ Date: _____
Biologist

Concur with Item 10: _____ Date: _____
ITA Coordinator

DESCRIPTION OF PROPOSED ACTION/COMMENTS:

SAMPLE

Discovery Notice - In the event that any cultural and/or paleontological site (historic or prehistoric) is discovered, it shall be immediately reported to a Bureau of Reclamation archaeologist. An evaluation of the significance of the discovery will be made by the archaeologist to determine appropriate actions to be taken to prevent loss of significant cultural or scientific value.

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APPROVAL:

Recommended: _____ Date: _____
Area Office Environmental Specialist

Approved: _____ Date: _____
Area Manager, Klamath Basin Area Office

APPENDIX 2 – Threatened and Endangered Species within the Upper Klamath Basin, Klamath County, Oregon.



**United States Department of the Interior
FISH AND WILDLIFE SERVICE**

Klamath Falls Fish and Wildlife Office
6610 Washburn Way
Klamath Falls, Oregon 97603
(541) 885-8481 FAX (541) 885-7837
kfallsfwo@fws.gov



**LISTED, PROPOSED, AND CANDIDATE SPECIES THAT
MAY OCCUR IN KLAMATH COUNTY, OREGON**

Status: **Endangered**

Phylum	Common Name	Scientific Name	Critical Habitat
Fish	Shortnose sucker	Chasmistes brevirostris	Proposed
Fish	Lost River sucker	Deltistes luxatus	Proposed
Plant	Applegate's Milkvetch	Astragalus applegatei	

Status: **Threatened**

Phylum	Common		
Name	Scientific Name	Critical Habitat	
Bird	Bald eagle	Haliaeetus leucocephalus	
Bird	Northern spotted owl	Strix occidentalis caurina	Designated
Fish	Bull trout (Klamath River DPS)	Salvelinus confluentus	Designated
Mammal	Canada lynx	Lynx canadensis	

Status: **Candidate**

Phylum	Common	
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Name	Scientific Name	Critical Habitat
Amphibian	Oregon Spotted frog	Rana pretiosa
Bird	Yellow-billed cuckoo	Coccyzus americanus occidentalis

Invertebrate	Mardon skipper butterfly	Polites mardon
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Phylum	Common Name	Scientific Name	Critical Habitat
Amphibian	Tailed frog	Ascaphus truei	
Amphibian	Cascades frog	Rana cascadae	
Amphibian	Foothill yellow-legged frog	Rana boylei	
Amphibian	Northern red-legged frog	Rana aurora aurora	
Bird	Tricolored blackbird	Agelaius tricolor	
Bird	Harlequin duck	Histrionicus histrionicus	
Bird	Little willow flycatcher	Empidonax traillii adastus	
Bird	Olive-sided flycatcher	Contopus cooperi (borealis)	
Bird	Western least bittern	Ixobrychus exilis hesperis	
Bird	Greater sage-grouse	Centrocercus urophasianus	
Bird	Acorn woodpecker	Melanerpes formicivorus	
Bird	Western burrowing owl	Athene cunicularia hypugea	
Bird	Yellow rail	Coturnicops noveboracensis	
Bird	Northern goshawk	Accipiter gentilis	
Bird	Ferruginous hawk	Buteo regalis	
Bird	Mountain quail	Oreortyx pictus	
Bird	White-headed woodpecker	Picoides albolarvatus	
Bird	White-faced ibis	Plegadis chihi	

Bird	Black tern	<i>Chlidonias niger</i>
Bird	Yellow-breasted chat	<i>Icteria virens</i>
Bird	Lewis' woodpecker	<i>Melanerpes lewis</i>
Fish	Slender sculpin	<i>Cottus tenuis</i>
Fish	Klamath redband trout	<i>Oncorhynchus mykiss newberryi</i>
Fish	Klamath largescale sucker	<i>Catostomus snyderi</i>
Invertebrate	Cockerell's striated disc (snail)	<i>Discus shimekii cockerelli</i>
Invertebrate	Cascades apatanian caddisfly	<i>Apatania</i> (= <i>Radema</i>) <i>tavala</i>

Invertebrate	Schuh's homoplectran caddisfly	<i>Homoplectra schuhi</i>
Invertebrate	Pea clam	<i>Pisidium ultramontanum</i>
Invertebrate	California floater (mussel)	<i>Anodonta californiensis</i>
Mammal	Long-eared myotis (bat)	<i>Myotis evotis</i>
Mammal	California wolverine	<i>Gulo gulo luteus</i>
Mammal	Pallid bat	<i>Antrozous pallidus pacificus</i>
Mammal	Pygmy rabbit	<i>Brachylagus idahoensis</i>
Mammal	Pale western big-eared bat	<i>Corynorhinus</i> (= <i>Plecotus</i>) <i>townsendii pallescens</i>
Mammal	Pacific big-eared bat	<i>Corynorhinus</i> (= <i>Plecotus</i>) <i>townsendii townsendii</i>
Mammal	Silver-haired bat	<i>Lasionycteris noctivagans</i>
Mammal	Small-footed myotis (bat)	<i>Myotis ciliolabrum</i>
Mammal	Fringed myotis (bat)	<i>Myotis thysanodes</i>
Mammal	Long-legged myotis (bat)	<i>Myotis volans</i>
Mammal	Yuma myotis (bat)	<i>Myotis yumanensis</i>
Mammal	Preble's shrew	<i>Sorex preblei</i>
Mammal	Pacific fisher	<i>Martes pennanti pacifica</i>
Plant	Playa phacelia	<i>Phacelia inundata</i>
Plant	Crater Lake rock cress	<i>Arabis suffrutescens</i> var. <i>horizontalis</i>
Plant	Peck's milk-vetch	<i>Astragalus peckii</i>
Plant	Greene's mariposa-lily	<i>Calochortus greenei</i>
Plant	Prostrate buckwheat	<i>Eriogonum prociduum</i>
Plant	Red-root yampah	<i>Perideridia erythrorhiza</i>
Reptile	Northern sagebrush lizard	<i>Sceloporus graciosus graciosus</i>
Reptile	Northwestern pond turtle	<i>Clemmys marmorata marmorata</i>